217/782-2113

CONSTRUCTION PERMIT - REVISED

PERMITTEE

Glen-Gery Corporation – Marseilles
Attn: Bailey Wilson
1401 Broadway Street
Marseilles, Illinois 61341

Application No.: 99100025 I.D. No.: 099050AAK
Applicant's Designation: BRICK PLANT Date Received: January 16, 2003
Subject: Brick Plant
Date Issued: January 22, 2003
Location: 1401 Broadway Street, Marseilles

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of modifications to a clay brick plant with two tunnel kilns and four tunnel dryers as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1.0 Unit Specific Conditions

1.1 Units 01 and 02 Brick Kiln

1.1.1 Description

This plant produces a variety of brick products in both residential and commercial sizes and with a full range of product colors, from traditional red brick to gray/white buff colored brick. The two primary raw materials used in making the brick products are shale and fireclay. The facility receives both of these materials from nearby mining operations and uses a crushing/screening/grinding operation to reduce them to the fine size needed for forming the green (unfired) brick. The ground shale and fireclay are mixed in different proportions to obtain the different colored brick products. Higher percentages of shale produce traditional red brick, while higher percentages of fireclay produce buff colored brick. Small amounts of other ingredients, including lime, are also added to the raw material mix along with water, and the brick is formed through an extrusion process. The extruded green brick is cut to size and loaded onto kiln cars prior to drying and firing.

The Marseilles operation uses tunnel dryers and tunnel kilns to produce the final products. The cars carrying green brick continually move on tracks through the dryers and kilns. The original facility, constructed in 1989,

included a single kiln, Kiln A, and two associated tunnel dryers, Dryers 1 and 2. In 2001 construction of the second kiln, Kiln B, was completed and it began operation. Along with the new kiln, two additional tunnel dryers, Dryers 3 and 4, were also constructed. Natural gas is the only fuel used to fire the kilns and dryers.

Through this permitting action, the source is seeking to increase allowable emissions.

1.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
01	Kiln A (Rated at 55 Million Btu/Hr) and Tunnel Dryers 1 and 2 (Rated at 14.7 mmBtu/Hr)	None
02	Kiln B (Rated at 55 Million Btu/Hr) and Tunnel Dryers 3 and 4 (Rated at 14.7 mmBtu/Hr)	None

1.1.3 Applicability Provisions and Applicable Regulations

a. The kilns and associated dryers are "affected kilns and dryers" for the purpose of these unit-specific conditions.

b. The affected kilns and dryers are subject to 35 IAC 212.321(a), which provides that:

No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321.

i. Interpolated and extrapolated values of the data in subsection (c) of 35 IAC 212.321 shall be determined by using the following equation:

$$E = A(P)^B$$

Where:

P = Process Weight Rate
E = Allowable Emission Rate

1. For process weight rates up to 408 MG/hr (450 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	1.214	2.54
B	0.534	0.534

2. For process weight rates greater than or equal to 408 MG/hr (450 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lbs/hr
A	11.42	24.8
B	0.16	0.16

[35 IAC 212.321]

c. No person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit. The emission of smoke or other particulate matter from any such emission unit may have an opacity greater than 30 percent but not greater than 60 percent for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one such emission unit located within a 1,000 foot radius from the center point of any other such emission unit owned or operated by such person, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period. [35 IAC 212.123(a) and (b)].

Note: Compliance with particulate matter regulations of 35 IAC 212.321 (See Condition 1.1.3(b)) may constitute a defense to 1.1.3(c). [35 IAC 212.124(d)]

d. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm, [35 IAC 214.301].

e. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 218.302, 218.303, 218.304 and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

1.1.4 Non-Applicability of Regulations of Concern

a. The affected kilns and dryers are not subject to the rules for Prevention of Significant Deterioration (40 CFR 52.21) since the source will be limiting their emissions to values below applicable PSD thresholds.

b. The affected kilns and associated dryers are not subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Brick and Structural Clay Products Manufacturing, 40 CFR 63, Subpart JJJJJ, since the rule will go into effect in 2005. Although Kiln B and its associated dryers were constructed after June, 1998, it will not be subject to Section 112(g) of the Clean Air Act because it will be limited to HAP emissions below 10 tons/year for HF and 10 tons/year for HCl.

c. The affected kilns and dryers are not subject to the New Source Performance Standards for Calciners and Dryers in Mineral Industries (40 CFR 60, Subpart UUU), since there is no calciner before firing of bricks.

d. The affected kilns and dryers are not subject to 35 IAC 216.121, Emissions of Carbon Monoxide from Fuel Combustion Emission Units, because the affected kilns are not by definition fuel combustion emission units.

e. The affected kilns and dryers are not subject to 35 IAC 217.121, emissions of nitrogen oxides from new fuel combustion emission sources, because the actual heat input of each unit is less than 73.2 MW (250 mmBtu/hr) and the affected kilns and dryers are not by definition fuel combustion emission units.

f. The affected kilns and dryers are not subject to 35 IAC 212.324, Process Emission Units In Certain Areas, because the source is not located in a non-attainment area for PM_{10}, as identified in 35 IAC 212.324(a)(1).

1.1.5 Operational and Production Limits and Work Practices

a. Operation of the Clay Brick Plant shall not exceed the following limits:

i. Brick production rate from affected Kiln B and its associated dryer shall not exceed 17 tons of fired brick per hour, 12,500 tons of fired brick per month, and 114,000 tons of fired brick per year. The hourly rate shall be determined by dividing the daily total by the hours operated that day.

ii. Brick production rate from all affected kilns and dryers shall not exceed 34 tons of fired brick per hour, 25,000 tons of fired brick per month, and 228,000 tons of fired brick per year. The hourly rate shall be determined by dividing the daily total by the hours operated that day.

b. Lime shall be added during production of brick to minimize emissions, to be added to the process at the following percentage for the given ratio of shale-to-clay usages:

Mix (Shale/Clay)	% Lime by Weight (Min)	(Max)
92/08	0	0
75/25	1	1
67/33	1	1
60/40	2	2
50/50	2	2
33/67	2	2
25/75	2	6
20/80	6	6
17/83	3	3
10/90	4	6
0/100	4	6

c. The affected kilns and dryers shall only be operated with natural gas as the fuel.

1.1.6 Emission Limitations

a. Emissions of pollutants from the combined operation of the affected kilns and dryers shall not exceed the following:

	(Lb/Hr)	(Tons/Mo)	(Tons/Yr)
PM/PM_{10}*	25.71	9.56	87.21
NO_x	15.05	5.61	51.07
SO_2**	194.92	72.51	240.15
CO	45.26	16.84	158.44
VOM	4.71	1.76	15.96
HCl	5.72	2.12	19.38
HF	5.38	2.00	18.24
Lead	0.005	0.00183	0.02
H_2SO_4	19.48	7.26	66.12

b. Emissions of pollutants from affected Kiln B and its associated dryers shall not exceed the following:

	(Lb/Hr)	(Tons/Mo)	(Tons/Yr)

	(Lb/Hr)	(Tons/Mo)	(Tons/Yr)
PM/PM_{10}*	12.86	4.78	43.61
NO_x	7.53	2.81	25.54
SO_2**	194.92	72.51	240.15
CO	22.63	8.42	79.22
VOM	2.36	0.88	7.98
HCl	2.86	1.06	9.69
HF	2.69	1.00	9.12
Lead	0.0025	0.0009	0.01
H_2SO_4	9.74	3.63	33.06

* All PM is treated as PM_{10}

** All sulfur oxides are treated as SO_2

1.1.7 Testing Requirements

The Permittee shall conduct laboratory tests once a month to determine sulfur content in shale and fireclay.

1.1.8 Monitoring Requirements

None

1.1.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items for the affected kilns and dryers to demonstrate compliance with Conditions 1.1.3 pursuant:

a. Records of monthly use of shale and clay per kiln, in tons;

b. Records of monthly brick production per kiln, in tons;

c. Operating hours for each affected kiln and dryer;

d. Usage records of lime, in wt. percent per batch; and

e. Records of monthly and annual NO_x, PM, SO_2, CO, HCl, Lead, HF, and VOM emissions from the affected kilns and dryers shall be maintained, based on fuel usage and the applicable emission factors, with supporting calculations.

1.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of noncompliance of the affected kilns and dryers with the permit requirements as follows. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

None

1.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

1.1.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 1.1.9 and the emission factors and formulas listed below:

a. Compliance with Conditions 1.1.3(b), (d), and (e) is assumed by the work-practices inherent in operation of natural gas-fired kilns and dryers.

b. Emissions from the affected kilns and dryers shall be calculated based on the following emission factors:

Pollutant	Kiln Emission Factor (Lb/Ton)	Dryer Emission Factor (Lb/Ton)
NO_x	0.35	0.098
PM/PM_{10}	0.688	0.077
SO_2 (Shale)	0.32	0.6*
SO_2 (Fireclay)	5.8	0.6*
VOM	0.11	0.03
CO	1.2	84.0*
HCl	0.17	0.0
HF	0.16	0.0
Lead	0.00015	0.0005*
H_2SO_4**	0.58	0.00

* Dryer emission factor is lb/mmcf rather than lb/ton.

** Based on fireclay

These are the emission factors for uncontrolled natural gas combustion in kilns and dryers, based on stack tests.

Kiln Emissions (lb) = (Tons of Brick Produced) x (The Appropriate Emission Factor, lb/ton)

Please note that this permit has been revised to clarify the emission factor units used in Condition 1.1.12(b) for CO, SO_2 and lead.

If you have any questions on this, please call Bob Smet at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section

Division of Air Pollution Control

DES:RPS:psj

cc: Region 2